

Volume 3, Chapters 23,30, and 31

Tracy Hemmeter [themmeter@valleywater.org]

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To: DWR CWP Comments

Attachments: Comments on Vol3_Ch25_Rech~1.pdf (380 KB) ; Comments on Vol3_Ch30_Wate~1.pdf (342 KB) ;
Comments on Vol3_Ch31_Wate~1.pdf (368 KB)

Here are the Santa Clara Valley Water District's comments on California Water Plan Update 2013 Volume 3, Chapters 25, 30, and 31.



TRACY HEMMETER
SENIOR PROJECT MANAGER
Water Utility Enterprise
Santa Clara Valley Water District
(408) 630-2647
themmeter@valleywater.org

Chapter 25. Recharge Area Protection

Recharge areas are those areas that provide the primary means of replenishing groundwater. Good natural recharge areas are those where good quality surface water is able to percolate through the sediments and rocks to the saturated zone which contains groundwater. If recharge areas cease functioning properly, there may not be sufficient groundwater for storage or use. Protection of recharge areas requires a number of actions based on two primary goals: (1) ensuring that areas suitable for recharge continue to be capable of adequate recharge rather than being covered by urban infrastructure, such as buildings and roads, and (2) preventing pollutants from entering groundwater to avoid expensive treatment that may be necessary prior to potable, agricultural, or industrial uses.

Protection of recharge areas is necessary to maintain the quantity and quality of groundwater in the aquifer. However, protecting recharge areas by itself does not provide a supply of water. Recharge areas only function properly when aquifer storage capacity is available, and when regional and local governments and agencies work together to secure an adequate supply of good quality water to recharge the aquifer. Protecting existing and potential recharge areas allows them to serve as valuable components of a conjunctive management and groundwater strategy (additional information on this strategy is available in Chapter 20).

California Water Plan Update 2013 includes three resource management strategies in this volume related to recharge areas protection:

1. “Conjunctive Management and Groundwater,” Chapter 9.
2. “Groundwater/Aquifer Remediation,” Chapter 16.
3. “Urban Stormwater Runoff Management,” Chapter 20.

Management of a natural resource, especially water, requires integration of various management efforts.

In simple terms, a groundwater system consists of three components: 1) recharge areas where surface water moves to groundwater, 2) storage media consisting of aquifers that store groundwater, and 3) discharge areas consisting of wells, springs, and rivers. As with many natural systems, there is an almost infinite variety in the way these components relate to each other in the real world.

PLACEHOLDER Box 25-1 Terminology


[Any draft tables, figures, and boxes that accompany this text for the public review draft are included at the end of the chapter.]


Managed Recharge Areas in California


The first documented artificial recharge program in California began in Los Angeles basin in 1889. In the early 1900s, water agencies operated recharge areas in the San Joaquin Valley. Additional areas for artificial recharge were established later in Southern California and in the San Francisco Bay area. While a certain amount of recharge takes place in many areas, the areas chosen by water management agencies were those that met three conditions. First, the sediment is coarse enough to allow surface water to

Summary of Comments on Vol3_Ch25_RechargeAreaProtection_PublicReviewDraft_Final_PDFed_fk.pdf

Page: 3

 Number: 1 Author: georcook Subject: Sticky Note Date: 11/27/2013 11:34:11 AM
SCVWD recommends adding a sentence to read, "Recharge areas are the portions of groundwater basins where permeable soils allow infiltration of surface waters to replenish groundwater."

 Number: 2 Author: georcook Subject: Sticky Note Date: 11/27/2013 12:10:51 PM
Suggest replacing with "prior to beneficial use."

 Number: 3 Author: georcook Subject: Sticky Note Date: 11/27/2013 11:38:22 AM
Recharge areas are functioning properly if there is sufficient storage capacity available, sufficient permeable surfaces remain present, and the quality of infiltrating water is not impaired.

Regional and local governments should work together to enhance recharge when possible, but this is not necessary for a recharge area to be functioning properly.

infiltrate at a higher rate than through finer sediments. Second, there is hydraulic continuity between the recharge area, the aquifer in which the groundwater is stored and transported, and the discharge area where wells are built to extract the groundwater. Third, a local agency had access to the land on which these first two conditions existed.

Recharge occurs instream, offstream, and through injection wells. Instream recharge allows water to percolate through the stream bed itself. Offstream recharge uses suitable sites outside the streambed. In some operations, the water must be pumped from its distant source to the offstream recharge area. Injection wells are used at locations where the cost to purchase large tracts of land for offstream spreading basins would be prohibitive.

Each method has its pros and cons. Instream and offstream spreading basins eventually become clogged by suspended fine-grained material carried in the surface water. As a result, the rate of recharge declines considerably making the basin much less effective. The fine-grained material must be removed to increase rate of recharge. In urban areas, the cost of land necessary for spreading basins is often prohibitive. Injection wells are expensive to build, but they may be more affordable than spreading basins in urban areas where land is very expensive. However, they could also clog unless the water is treated, turbidity is minimal, and air is not entrained.

¹These areas may be hydrogeologically suited for use as recharge areas if they meet the three conditions cited above — coarser sediments, hydraulic continuity between the recharge area and the discharge area, and local agency ownership. Table 25-1 shows current sites in California that are managed for artificial recharge. ²

PLACEHOLDER Table 25-1 Recharge Sites in California

[Any draft tables, figures, and boxes that accompany this text for the public review draft are included at the end of the chapter.]


The State Water Resources Control Board (SWRCB) has compiled a Hydrogeologically Vulnerable Areas Map shown in Figure 25-1. The map shows areas where published reports indicate there is a hydrogeologic vulnerability between the ground surface and groundwater. Contamination of these areas would lead to contamination of the groundwater in the aquifer (State Water Resources Control Board 2011 updated). ³

PLACEHOLDER Figure 25-1 Hydrogeologically Vulnerable Areas Map


[Any draft tables, figures, and boxes that accompany this text for the public review draft are included at the end of the chapter.]


The size of existing recharge areas and the amount of groundwater that is artificially recharged annually is substantial, but there is no procedure in place that quantifies that amount. The total amount of land devoted to spreading basins and offstream and instream recharge most likely exceeds 50 square miles. The actual area is difficult to determine, partially because many diversion ditches and creeks are active artificial recharge sites during some periods of the year. These active recharge areas and other areas should be protected for recharge purposes. ⁵


Page: 4

 Number: 1 Author: trachemm Subject: Highlight Date: 11/27/2013 12:12:15 PM

 Number: 2 Author: georcook Subject: Sticky Note Date: 11/27/2013 11:38:50 AM
It is unclear to what "these areas" refers to.

 Number: 3 Author: georcook Subject: Sticky Note Date: 11/27/2013 12:14:46 PM
SCVWD recommends clarifying this section. A discussion of both groundwater sensitivity and vulnerability should be included, and both need to be defined.

 Number: 4 Author: trachemm Subject: Inserted Text Date: 11/27/2013 12:14:09 PM
could

 Number: 5 Author: georcook Subject: Sticky Note Date: 11/27/2013 12:18:23 PM
SCVWD recommends clarifying that this statement is referring to statewide conditions. Groundwater management agencies often quantify their annual recharge amounts and the size of their recharge facilities.


However, this practice may introduce contaminants, especially hydrocarbons, nitrates, and solvents into the aquifer unless there is pre-treatment to remove the contaminants.

Potential Costs

Some of the costs that may be associated with protecting recharge areas are:

- Purchase or lease price of the land that may be used for a recharge area.
- Designing and constructing facilities.
- Land reserved for recharge areas cannot be used for other purposes that might provide a significant income for the landowner and tax revenues for the government.
- No tax revenue for the county if a local government agency owns the land.
- Periodic well field monitoring that warns about contamination.
- Groundwater remediation used to control contaminant releases near recharge areas.

Water supply can be lost by not protecting recharge areas. The growth of urban areas with large impervious roads, freeways, parking lots, and large warehouse-type buildings means that these areas no longer allow runoff to infiltrate into the ground. Instead, the runoff flows rapidly into streams which peak more quickly and at higher flow rates than before these urban structures were built. This runoff may create more frequent flood flows, losing the opportunity and effectiveness for natural groundwater recharge. Facilities are then needed to artificially recharge the groundwater at a cost to ratepayers. In a few urban areas, injection wells have been built to take the place of recharge areas that were lost to urban development. Injection wells are expensive, require careful technical control, and are not necessarily successful. However, they may be cost-effective compared to the high cost of urban land in many cities.

Many potentially contaminating activities routinely have been allowed in recharge areas and contaminants have been carried into the aquifers. Because groundwater processes and the potential for contamination are not well understood by the public,  if these practices continue today. Remediation of contaminated aquifers can take decades, cost millions or billions of dollars, and increase the rate of global climate change due to CO₂ emissions from remediation systems. Groundwater remediation may never remove the contaminant completely from the aquifer. In such cases, the extracted groundwater must be treated at the wellhead at a significant expense before it is suitable for potable and other uses.

A lack of protection of recharge areas could decrease the availability of usable groundwater. Studies by the U.S. Geological Survey show contaminants present in recharge areas for aquifers in the Los Angeles area. Because of the low velocity of groundwater movement through the aquifer, contamination that occurs today may not arrive at down-gradient wells for 10 years or longer. When the contamination does arrive at the down-gradient wells in 10 or more years, treatment may be needed before the groundwater can be used thereby increasing the cost of water to future users. Protecting recharge areas now may help to prevent costs from escalating excessively in the future by reducing the need for expensive groundwater treatment. If California protects recharge areas by retaining those areas for recharge and by preventing contamination today, this reduces future costs. Restoration of recharge areas may also help to keep future costs lower.

Major Implementation Issues

Climate Change

Changing precipitation patterns may affect the availability of surface water supplies capable of recharging groundwater basins. In the past decades, there has been a gradual shift in snowpack and runoff timing in California where runoff is occurring earlier in the year. This shift may also reduce groundwater recharge during the summer months. In addition, sea level rise may impact coastal aquifers and complicate using them for recharge.

Adaptation

Monitoring, maintaining, and enhancing the health of recharge areas and groundwater basins are important adaptive strategies. Groundwater use may be a central response to droughts. During these droughts, cities and regions that have adequate groundwater supplies may be less likely to rely upon distant water supply sources. Protecting recharge areas allows for additional recharge during wet winters, which can provide a better reserve for drought periods. Coastal regions that recharge and maintain groundwater aquifers may be less likely to lose aquifer capacity due to sea level rise. Maintaining recharge areas may also enhance flood management by reducing the volume of flood flows to populated areas.

Mitigation



Recycled water can supplement other sources of recharge water and provide additional water to groundwater basins. If more recycled water is used for groundwater recharge, more recharge areas may be needed. Greater reliance upon local groundwater in many areas of the state is less energy intensive than relying upon imported or desalinated water. Reduced energy use for water supply results in lower greenhouse gas emissions.

Zoning

Zoning can play a major role in protecting recharge areas by amending local codes to establish minimum softscape requirements for parcels so that existing recharge sites are retained as recharge areas. Some areas that would provide good rates of recharge have been paved over or built upon and are no longer available to recharge the aquifer. Local governments often lack a clear understanding of recharge areas and the need to protect those areas from development or contamination. Land use zoning staff should consider the need for recharge area protection for water quantity and water quality.

Vector and Odor Issues





Standing water in recharge ponds or spreading basins attracts mosquitoes, dragonflies, and other insects whose egg, larval, and pupal stages mature underwater. Dragonflies eat insects they catch on-the-fly, including mosquitoes, which can be vectors for a number of serious or deadly diseases. Existing recharge programs use large numbers of mosquitofish which feed on the mosquito larvae in the water. Odors can be generated by growth and decay of algae and other water-borne vegetation. Both vectors and odors must be addressed in any recharge program that involves standing water.

Potential Impacts





Protecting recharge areas can remove land from availability for other uses.

Recommendations

The State can help promote additional protection of recharge areas implementing the following recommendations:

1. Increase State funding for proposals to identify and protect recharge areas including incentives for locating and for the proper destruction of abandoned water wells, monitoring wells, cathodic protection wells, and other wells that could become vertical conduits for contaminating the aquifer.
2. Provide funding and staff for the CDPH to initiate a program that would provide guidance and funding for tribes, local governments, and agencies to implement source water protection measures that are logical outgrowths of the Drinking Water Source Assessment and Protection Program.
3. Expand research into surface spreading as a means of groundwater recharge and the fate and transport of chemicals and microbes contained in the recharge water.
4. Develop a statewide program to identify actual and potential recharge areas throughout the state and provide that information to tribal, city, and county governments. 
5. Engage the public in an active dialogue using a value-based decision-making model in planning land use decisions that involve recharge areas.
6. Adopt a State-sponsored media campaign to increase public awareness and knowledge of groundwater and the importance of recharge areas.
7. Local governments should identify recharge areas within their General Plan maps. Since groundwater is vulnerable to contamination at recharge areas, measures necessary to protect these areas should be included in a groundwater protection section of each local government's general plan. 
8. Ensure that federal and State programs regulating subsurface disposal in accordance with the federal Safe Drinking Water Act's Underground Injection Control program and the California Clean Water Act's waste discharge requirements are fully funded and staffed.
9. Require local governments to provide protection of recharge areas for aquifers that have been identified as "sole source aquifers" pursuant to the Safe Drinking Water Act of 1974 and Amendments. 
10. Develop educational programs for public works officials and other officials of local agencies and governments that help them to develop programs that realistically deal with the interaction of groundwater, surface water, stormwater, recycled water, other surface flows, and the effect of contaminants in surface flows on contaminant levels in the aquifers. 
11. Require that source water protection plans include an element that addresses recharge areas if groundwater is a part of the supply.
12. Convene a statewide panel to recommend changes to public schools and higher education curricula relating to groundwater. Encourage an integrated academic program on one or more campuses to promote groundwater (quantity and quality) protection strategies and why recharge areas are critical components.
13. Develop a uniform method for analyzing the economic benefits and cost of recharge areas. Provide guidance and assistance for economic feasibility analyses that could be used by project

Page: 9

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-  Number: 1 Author: georcook Subject: Sticky Note Date: 11/27/2013 12:01:33 PM
Identification of recharge areas is better completed at the regional or local level. The State should provide funding to encourage local efforts to protect recharge areas.
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-  Number: 2 Author: trachemm Subject: Sticky Note Date: 11/27/2013 12:02:08 PM
Local governments should coordinate with groundwater management agencies, which should be able to identify the recharge areas and appropriate groundwater protection actions.
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-  Number: 3 Author: trachemm Subject: Sticky Note Date: 11/27/2013 12:02:51 PM
There should be funding associated with this requirement. And local government activities should be coordinated with groundwater management agency actions.
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-  Number: 4 Author: trachemm Subject: Sticky Note Date: 11/27/2013 12:03:23 PM
Fully support this recommendation, but would add that the effort should be coordinated with local groundwater management agencies.
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Recommendations

1. Water management agencies should have an appointed preservation officer who is responsible for cultural resource stewardship, developing policies and plans for the protection of historical resources, and ensuring that the agency follows these policies as well as applicable State and federal requirements.
2. Water management agencies should have cultural resource management programs, which include the following:
 - A. Inventory of all cultural resources within the jurisdiction of the agency.
 - B. Program of systematic condition assessment of cultural resources.
 - C. Develop treatment plans and prioritized programs for routine maintenance of individual resources.
 - D. Establish and maintain a data file for each cultural resource or groups of resources organized by field division(s).
 - E. Identified research goals for archaeological, ethnographic, and historical research proposed within the jurisdiction.
 - F. Management of any archaeological or historical object collections maintained by the agency.
 - G. Establish and maintain relationships with California Native American tribes and communities who may have an interest in the cultural resources of the agency.
 - H. Staff training and education about cultural resource management.
 - I. Coordination with local archaeological and historical societies and other groups with an interest in cultural resource protection.
3. Educate the public about the Surfrider Foundation, the Bolsa Chica \$150 million settlement, *Cadillac Desert*, Mary Austin, Tahoe Blue, and Friends of the River.
4. Educate children how watersheds work, provide knowledge about how water works, about water flow, how water moves, impacts of using water resource, AmeriCorps projects throughout state, communities service water project engage, and NPS/PS projects. Add the hydrologic cycle to the California education standard. Every student should learn the hydrologic cycle from headwater to ocean and the impact and dependency the state has on water.
5. Expand inclusion and integration of traditional/indigenous practices and knowledge in resources management and planning processes and decisions.
6. Educate the public about resource stewardship activities associated with different groups and organizations.
7. Centralize information on cultural and historical resources into one database.
8. Protect sensitive sites from vandalism.


References


References Cited


- Brian Fagan, *Elixir: A History of Water and Humankind*, New York: Bloomsbury Press, 2011, xx.
- Walker, K. and M. Arnn. National Oceanic and Atmospheric Administration (NOAA). 1998. "Preserving Waterfronts for Water Dependent Uses" NOAA's State of the Coast Report. Silver Spring, MD: NOAA. Viewed online at: http://state_of_coast.noaa.gov/bulletins/html/wdu_11/wdu.html.

Summary of Comments on Vol3_Ch30_WaterAndCulture_PublicReviewDraft_jt_kjd_eca_ legal_Edited_Final-JW.pdf


Page: 13

 Number: 1 Author: trachemm Subject: Highlight Date: 11/27/2013 12:47:17 PM


 Number: 2 Author: trachemm Subject: Highlight Date: 11/27/2013 12:45:10 PM

 Number: 3 Author: trachemm Subject: Sticky Note Date: 11/27/2013 12:50:05 PM


Many of these actions are not within the authority of water agencies. For example, SCVWD groundwater production charges can only be used for 4 specific purposes (all related to water supply) per State law.

 Number: 4 Author: trachemm Subject: Sticky Note Date: 11/27/2013 12:51:46 PM

Implementing many of these actions could be duplicative of other agencies' efforts or should be done collaboratively within a region. For instance, it wouldn't make sense for SCVWD (a countywide agency) to have a separate inventory of resources than the county.

 Number: 5 Author: trachemm Subject: Sticky Note Date: 11/27/2013 12:54:07 PM

Recommendation 3 needs to be restated to better reflect the intent of the education.

 Number: 6 Author: trachemm Subject: Highlight Date: 11/27/2013 12:52:30 PM


8. Develop partnerships between recreation planners, recreation equipment manufacturers and retailers, and universities to coordinate the monitoring of public recreation use, equipment, and emerging water-dependent recreation trends.
9. Develop strategies to incorporate recreation facilities, such as trails, in the planning design of new floodways, levees, environmental restoration, and other water facilities.
10. Maintain access to public beaches.
11. Participate in the National Water Trails System.
12. Consider removal of unnecessary navigational barriers.
13. Consider legislation or regulatory changes to address public access liability concerns of private property owners adjacent to navigable waterways.
14. Construct water-dependent recreational facilities in urban areas and disadvantaged communities.
15. Develop more robust marketing strategies, including free days, special events, and incentives to visit more often, to attract new users.
16. California State Parks should quantify unmet recreation demand in the SWP and Central Valley Flood Protection Plan market regions and develop a comprehensive strategy for meeting the needs identified.
17. Incorporate public transit and bicycle access to recreational facilities and lands in county or regional transportation plans.
18. Perform research on the water quality impacts of recreation and develop best management practices for monitoring and reducing these impacts.
19. Develop multilingual adult education programs to introduce safe practices in water-dependent recreation.


Climate Change


20. Create/participate in a climate change network of agencies that keeps members abreast of new data and strategies and provides opportunities for collaboration.
21. Conduct climate change adaptation planning for each region of the state. Create a geographic-information-systems-based tool to identify areas and resources vulnerable to climate change impacts, such as low elevations vulnerable to sea level rise, floodplains, and areas with plants and wildlife sensitive to drought.
22. Identify a procedure to incorporate climate change assessments within all infrastructure planning, budgeting, and project development.
23. Design facilities to accommodate environmental and management changes, including longer boat ramps, as well as moveable facilities such as floating campsites, lifeguard towers, and restrooms. Conduct systematic assessments of potential impacts of climate change on recreation resources to identify suggested adaptations.
24. If average reservoir levels drop, there may be a need to emphasize river recreation, such as through implementing California State Parks' *Central Valley Vision Implementation Plan* for increased river access and water trails for rafters and boaters.
25. Consider developing artificial reefs to prevent coastal beach and bluff erosion and to enhance surfing.
26. Develop climate change education programs at parks.
27. Consider regulatory changes to facilitate easier climate change adaptation and mitigation project permitting at public parks and beaches.


Summary of Comments on Vol3_Ch31_WaterDependentRecreation_PublicReviewDraft_ Final_PDFed_fk.pdf

Page: 22

 Number: 1 Author: trachemm Subject: Highlight Date: 11/27/2013 12:57:35 PM



 Number: 2 Author: trachemm Subject: Sticky Note Date: 11/27/2013 12:58:23 PM
Need to clarify the relationship to water.

 Number: 3 Author: trachemm Subject: Highlight Date: 11/27/2013 12:59:21 PM


 Number: 4 Author: trachemm Subject: Sticky Note Date: 11/27/2013 1:00:11 PM
These are general recommendations - not specific to water-dependent recreation. As stated, they don't belong in this section.


28. Develop a CEQA checklist for potential impacts of climate change adaptation infrastructure, such as sea walls, on recreation resources.


Lack of Funding


29. Develop more robust funding streams for impartial recreation research, including assessments of the full benefits of water-dependent recreation.
30. Strengthen the requirement that IRWM plans consider water-dependent recreation and that multi-benefit projects, such as those with recreation components, receive funding priority.
31. Update the Davis-Dolwig Act provisions to fund water-dependent recreation enhancements more fully at federally authorized and State-authorized water projects.
32. Work closely with hydroelectric dam operators participating in FERC relicensure to identify adequate funding sources for proposed recreation enhancements.
33. Update State funding programs, such as that authorized by the Davis-Grunsky Act, which prioritize multi-benefit projects and encourage future grant programs to give priority to multi-benefit flood control and water supply projects and programs that incorporate recreation.
34. Quantify how reduced water-dependent recreation opportunities — such as low lake/reservoir levels occurring during peak visitation periods that affect visitor spending — can affect park budgets and local economies.
35. Develop more realistic cost/benefit analyses that allow appropriate cost-sharing among all beneficiaries of water projects. 
36. Develop more stable State and local funding sources to ensure safe, affordable public access to recreational opportunities.
37. Maintain an updated list of deferred maintenance of recreational facilities to facilitate applications for federal, State, and philanthropic funding.
38. Develop funding to resolve legacy impacts, such as reduced fisheries and restricted access to inland waterways, especially in or near disadvantaged communities.
39. Develop more flexible funding strategies for facilities that can be constructed only during low-water periods (e.g., boat ramps and docks).
40. Provide mitigation funding for recreational facilities affected by reservoir reoperation for flood management and water supply. 
41. Reduce construction costs for water-dependent recreation projects by revising water quality standards such that turbidity levels may be allowed up to levels found in the waterway during heavy rainstorms.
42. Consider expanding recreation-equipment-based fees, such as fees on hunting and fishing equipment, to a wider array of recreation equipment, to fund new recreation facilities or renovate existing ones.


Natural Resources Degradation

43. Conduct flow assessments on major river systems to analyze the impacts of flow levels on wildlife, habitats, and recreation opportunities.
44. Evaluate and periodically reexamine scientifically valid studies of the carrying capacity of proposed and existing sites for water-dependent recreation, to help prevent degradation of water quality and wildlife habitat. Examine and utilize data collected by agencies such as the U.S. Bureau of Reclamation, the U.S. Army Corps of Engineers, and FERC.
45. Maintain and restore vegetation along rivers and streams. 
46. Restore sustainable native fisheries.

 Number: 1 Author: trachemm Subject: Sticky Note Date: 11/27/2013 1:02:28 PM
Please clarify how this supports water-dependent recreation

 Number: 2 Author: trachemm Subject: Sticky Note Date: 11/27/2013 1:07:36 PM
This needs to be developed more. Who would provide the mitigation funding? Who would be eligible for the mitigation funding? For example, SCVWD has dams/reservoirs that were constructed for water supply purposes with water supply funding. We allow joint use on the reservoirs through a lease with county parks department. We need to do seismic retrofits on some dams, which will require drawing down the reservoirs. This will be an impact on recreation. We're trying to minimize the impact, but shouldn't be required to pay for mitigation.

 Number: 3 Author: trachemm Subject: Highlight Date: 11/27/2013 1:08:11 PM

 Number: 4 Author: trachemm Subject: Sticky Note Date: 11/27/2013 1:08:54 PM
These recommendations need to be more specific to recreation.





47. Consider river naturalization or de-channelization to provide urban open space along rivers or canals for recreation.
48. Create multi-benefit flood control, water transfer, and storage facilities that emulate natural ecological systems and accommodate recreational access.
49. Create partnerships with education providers to educate youths about outdoor ethics and about preserving and protecting natural resources. Examples of progress on this recommendation include work being done by the Biodiversity Council and Stewardship Council. Use parks as outdoor classrooms.
50. Improve sand flow for natural beach replenishment by reestablishing soft-bottom creeks and rivers, removing dams that impede sand flow, and preventing groins and jetties that also impede sand flow.
51. Develop and share sand replenishment and conservation strategies among agencies.
52. Integrate recreational facilities into habitat mitigation projects.

Invasive Species Impacts

53. Inventory water facilities and measure their vulnerability to specific invasive species.
54. Prioritize and develop preventive measures and response strategies for the most at-risk facilities.
55. Develop stable funding to expand monitoring and preventative measures with a combination of “beneficiary pays” and “stressor pays” principles.
56. Develop long-term watershed-based strategies for invasive species control.
57. Develop regional and statewide partnerships to establish consistent inspection guidelines, reduce cost, and allow easier compliance with invasive species inspection programs.
58. Expand research into efficient management strategies.
59. Engage volunteer groups in management programs.

Water Quality Impacts

60. Educate residents and businesses in the watershed about their role in protecting water quality. Explain water quality issues to the public in more understandable and compelling ways.
61. Test surface water quality more often and make real-time water quality information for surface waters more accessible online and at recreation sites.
62. Develop best management practices guidance for reducing recreation-based water quality impacts, including impacts from recreation vehicles — such as reduced pollution of marine engines and parking lot runoff.
63. Enter into agreements with other agencies and governing bodies, as appropriate, to secure their cooperation in maintaining or restoring the quality of water resources.
64. Take proactive measures to limit sea level rise impacts on water-side sewage facilities.
65. Integrate stormwater management devices/techniques into open space or parks, or both, to address water quality and quantity issues. Stormwater can be redirected from impervious surfaces (e.g., roads, driveways, sidewalks, and rooftops) and into open space/park land where stormwater devices (e.g., vegetated swales, retention areas, infiltration basins, and porous pavement) capture runoff, remove pollutants, and recharge aquifers.
66. Develop a plan to resolve legacy pollution impacts on recreational waters.

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-  Number: 1 Author: trachemm Subject: Sticky Note Date: 11/27/2013 1:11:11 PM
All the highlighted recommendations need to be made specific to water-dependent recreation. Otherwise, they should be in other chapters.
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-  Number: 2 Author: trachemm Subject: Highlight Date: 11/27/2013 1:10:03 PM
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-  Number: 3 Author: trachemm Subject: Sticky Note Date: 11/27/2013 1:09:56 PM
Need to tie all these recommendations to water-dependent recreation.
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-  Number: 4 Author: trachemm Subject: Highlight Date: 11/27/2013 1:11:31 PM
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Water Quantity Changes

67. Develop and maintain closer working relationships between water management agencies, such as DWR and the U.S. Bureau of Reclamation, and water-dependent recreation providers, such as East Bay Regional Park District and California State Parks, so that recreation planning and operations are better incorporated into water management planning.
68. Design and construct facilities to accommodate environmental and management changes, including longer boat ramps as well as moveable facilities, such as floating campsites, lifeguard towers, and restrooms.
69. Develop plans for accommodating increased precipitation variability and uncertainty, including drought contingency planning, for parks.
70. Develop and implement plans to minimize artificial sedimentation that creates recreational boating barriers.

Agency/Organization Coordination

71. Promote and establish effective partnerships among federal agencies, State and local governments, California tribes, and the private sector for operation, maintenance, and law enforcement at water-dependent recreation sites.
72. Work to maintain consistency between the California Water Plan and other agency reports, such as the California Outdoor Recreation Plan updates and all federally authorized and State-authorized water projects.
73. Coordinate research needs with recreation-serving businesses and manufacturers.
74. Provide an online searchable database of recreation-oriented educational opportunities offered by agencies and organizations.
75. Provide an online searchable database of recreation-oriented volunteer opportunities offered by agencies and organizations.
76. Include collaboration time and funding in project schedules and budgets.
77. Invite stakeholder collaboration in the project formulation stage.

Water-Dependent Recreation in the Water Plan

[This is a new heading for Update 2013. If necessary, this section will discuss the ways the resource management strategy is treated in this chapter, in the regional reports and in the sustainability indicators. If the three mentions aren't consistent, the reason for the conflict will be discussed (i.e., the regional reports are emphasizing a different aspect of the strategy). If the three mentions are consistent with each other (or if the strategy isn't discussed in the rest of Update 2013), there is no need for this section to appear.]

References

References Cited

- California Department of Boating and Waterways. 2003. *Sacramento-San Joaquin Delta Boating Needs Assessment 2000-2020*. Sacramento (CA): California Department of Boating and Waterways. Viewed online at: <http://www.dbw.ca.gov/Reports/deltaindex.aspx>. Accessed: December 2009.
- . 2008. *2007 California Boating Safety Report*. Sacramento (CA): California Department of Boating and Waterways. 68 pp. Viewed online at:

